

## CLAIMS

1. A flying head type optical head apparatus,  
comprising:

5 a fixed arm;

a suspension, an end of which is fixed to  
said fixed arm and the other end is a free end;

a slider attached to the free end of said  
suspension;

10 an object lens mounted on said slider;

an optical means fixed to said fixed arm and  
having a light source and a light receiving system;

a collimeter lens positioned between said  
light source and said object lens along an optical axis  
15 connecting said light source and said object lens, for  
converging a light from said light source to make it  
enter said object lens, converging a returned-back light  
from said object lens to make it enter said light source;  
and

20 a first collimeter lens moving means for  
moving said collimeter lens along said optical axis  
between said light source and said object lens;

wherein the slider mounted with said object  
lens, attached to the free end of said suspension floats  
25 due to a wind pressure of a rotary body rotating at a

position facing to said object lens.

2. An optical head apparatus as set forth in claim 1, wherein said collimeter lens is positioned so that a focal position thereof positions approximately at  
5 a light emission point of said light source, and an incident iris of said object lens positions at a focal position when assuming that a parallel light enters from the light source to said collimeter lens.

3. An optical head apparatus as set forth in  
10 claim 2, wherein a distance between said collimeter lens and the light emission point of said light source is approximately equal to a distance between said collimeter lens and the incident iris of said object lens.

4. An optical head apparatus as set forth in  
15 claim 1, wherein said first collimeter lens moving means is an electromagnet.

5. An optical head apparatus as set forth in claim 1, wherein said first collimeter lens moving means is a Piezo-effect element.

20 6. An optical head apparatus as set forth in claim 1, wherein said rotary body is a rotary optical recording medium.

7. An optical head apparatus as set forth in claim 1, further comprises a second collimeter lens  
25 moving means for substantially moving said collimeter

lens in the direction perpendicular to said optical axis.

8. An optical head apparatus as set forth in claim 7, wherein said second collimeter lens moving means is an electromagnet.

5 9. An optical head apparatus as set forth in claim 7, wherein said second collimeter lens moving means is a Piezo-effect element.

10 10. An optical head apparatus as set forth in claim 7, wherein said rotary body is a rotary magneto-optical recording medium.

11. An optical head apparatus as set forth in claim 1, wherein  
said optical means fixed to said fixed arm  
emits a light from said light source along a surface of  
15 said arm; and

said fixed arm is provided with a mirror for directing the light emitted from said optical means to said collimeter lens.

12. An optical head apparatus as set forth in  
20 claim 11, wherein

said optical means fixed to said fixed arm emits a light from said light source along a surface of said fixed arm; and

said fixed arm has a mirror for directing the  
25 light emitted from said optical means to said collimeter

lens and a mirror rotation means for rotating the mirror for making the light emitted from said optical means enter said collimeter lens by being shifted from said optical axis.

5           13.    An optical head apparatus as set forth in claim 12, wherein said mirror rotation means is an electromagnet.

          14.    An optical head apparatus as set forth in claim 12, wherein said mirror rotation means is a Piezo-  
10   effect element.

          15.    An optical head apparatus as set forth in claim 1, wherein said object lens is configured by combining two converging lenses provided close to the slider and used for a near field recording operation.

15           16.    An optical recording/reproducing apparatus, comprising:

                  a rotary driving means for a rotary recording medium for optically or magneto-optically recording and/or recording/reading data;

20                   a flying head type optical head apparatus comprising a fixed arm; a suspension, an end of which is fixed to said fixed arm and the other end is a free end; a slider attached to the free end of said suspension; an object lens mounted on said slider; an optical means  
25   fixed to said fixed arm and having a light source and a

light receiving system; a collimeter lens positioned between said light source and said object lens along an optical axis connecting said light source and said object lens, for converging a light from said light source to  
5 make it enter said object lens; and a first collimeter lens moving means for moving said collimeter lens along said optical axis between said light source and said object lens; wherein the slider mounted with said object lens, attached to the free end of said suspension floats  
10 due to a wind pressure caused by rotation of said rotary recording medium rotating at a position facing to said object lens; and

a control apparatus for performing tracking control on said optical head apparatus, comprising a  
15 collimeter lens position control means for controlling a position of said collimeter lens by driving said first collimeter lens moving means based on a focus error signal.

17. An optical recording/reproducing apparatus as  
20 set forth in claim 16, wherein said collimeter lens is positioned so that a focal position thereof positions approximately at a light emission point of said light source, and an incident iris of said object lens positions at a focal position when assuming that a  
25 parallel light enters from the light source to said

collimeter lens.

18. An optical recording/reproducing apparatus as set forth in claim 17, wherein a distance between said collimeter lens and the light emission point of said light source is approximately equal to a distance between said collimeter lens and the incident iris of said object lens.

19. An optical recording/reproducing apparatus as set forth in claim 16, wherein  
said optical head apparatus further comprises a second collimeter lens moving means for substantially moving said collimeter lens in the direction perpendicular to said optical axis; and

said control apparatus further comprises a tracking sub servo control means for controlling a position of said collimeter lens to the track direction of said rotary recording medium by driving said second collimeter lens moving means based on a tracking error signal.

20. An optical recording/reproducing apparatus as set forth in claim 16, wherein

said rotary recording medium has one or a plurality of recording surfaces; and

said collimeter lens position control means of said control means drives said first collimeter lens

moving means to adjust a position of said collimeter lens  
so that a light from said light source is focused on one  
recording surface subjected to recording or reproducing  
of data through said object lens among one or a plurality  
5 of recording surfaces of said rotary recording medium.